

TRENCHSTOP™ IGBT4 Low Power Chip

Features:

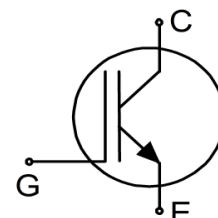
- 1200V trench & field stop technology
- Low switching losses
- Positive temperature coefficient
- Easy paralleling

Recommended for:

- Low / medium power modules

Applications:

- Low / medium power drives



| Chip Type | V_{CE} | I_{Cn}^1 | Die Size | Package |
|--------------|----------|------------|-----------------|--------------|
| IGC27T120T8L | 1200V | 25A | 4.99mm x 5.45mm | Sawn on foil |

Mechanical Parameters

| | | |
|----------------------------------|---|--|
| Die size | 4.99 x 5.45 | mm ² |
| Emitter pad size | See chip drawing | |
| Gate pad size | 0.826 x 1.31 | |
| Area total | 27.2 | |
| Thickness | 115 | μm |
| Wafer size | 200 | mm |
| Maximum possible chips per wafer | 995 | |
| Passivation frontside | Photoimide | |
| Pad metal | 3200nm AlSiCu | |
| Backside metal | Ni Ag – system To achieve a reliable solder connection it is strongly recommended not to consume the Ni layer completely during production process | |
| Die bond | Electrically conductive epoxy glue and soft solder | |
| Wire bond | Al, ≤500μm | |
| Reject ink dot size | Ø 0.65mm; max. 1.2mm | |
| Storage environment | for original and sealed MBB bags | Ambient atmosphere air, temperature 17°C – 25°C, <6 months |
| | for open MBB bags | Acc. to IEC62258-3: atmosphere >99% Nitrogen or inert gas, humidity <25%RH, temperature 17°C – 25°C, <6 months |

¹ Nominal collector current at $T_C=100^\circ\text{C}$ for chip packaged in power modules, see application example cited on page 5.

Maximum Ratings

| Parameter | Symbol | Value | Unit |
|---|--------------|--------------|--------------------|
| Collector-emitter voltage, $T_{vj}=25^{\circ}\text{C}$ | V_{CE} | 1200 | V |
| DC collector current, limited by $T_{vj\text{ max}}^2$ | I_C | - | A |
| Pulsed collector current, t_p limited by $T_{vj\text{ max}}^3$ | $I_{C,puls}$ | 75 | A |
| Gate-emitter voltage | V_{GE} | ± 20 | V |
| Operating junction temperature | T_{vj} | -40 ... +175 | $^{\circ}\text{C}$ |
| Short circuit data ^{3/4} $V_{GE}=15\text{V}$, $V_{CC}=800\text{V}$, $T_{vj}=150^{\circ}\text{C}$ | t_{sc} | 10 | μs |

Static Characteristics (tested on wafer), $T_{vj}=25^{\circ}\text{C}$

| Parameter | Symbol | Conditions | Value | | | Unit |
|--------------------------------------|---------------|--|-------|------|------|---------------|
| | | | min. | typ. | max. | |
| Collector-emitter breakdown voltage | $V_{(BR)CES}$ | $V_{GE}=0\text{V}$, $I_C=0.85\text{mA}$ | 1200 | - | - | V |
| Collector-emitter saturation voltage | V_{CEsat} | $V_{GE}=15\text{V}$, $I_C=25\text{A}$ | 1.58 | 1.85 | 2.07 | |
| Gate-emitter threshold voltage | $V_{GE(th)}$ | $I_C=0.85\text{mA}$, $V_{GE}=V_{CE}$ | 5.3 | 5.8 | 6.3 | |
| Zero gate voltage collector current | I_{CES} | $V_{CE}=1200\text{V}$, $V_{GE}=0\text{V}$ | - | - | 2.4 | μA |
| Gate-emitter leakage current | I_{GES} | $V_{CE}=0\text{V}$, $V_{GE}=20\text{V}$ | - | - | 120 | nA |
| Integrated gate resistor | r_G | | none | | | Ω |

Electrical Characteristics ³

| Parameter | Symbol | Conditions | Value | | | Unit |
|--------------------------------------|-------------|--|-------|------|------|------|
| | | | min. | typ. | max. | |
| Collector-emitter saturation voltage | V_{CEsat} | $V_{GE}=15\text{V}$, $I_C=25\text{A}$, $T_{vj}=150^{\circ}\text{C}$ | - | 2.25 | - | V |
| Input capacitance | C_{ies} | $V_{CE}=25\text{V}$, $V_{GE}=0\text{V}$, $f=1\text{MHz}$ $T_{vj}=25^{\circ}\text{C}$ | - | 1450 | - | pF |
| Reverse transfer capacitance | C_{res} | | - | 50 | - | |

² Depending on thermal properties of assembly.

³ Not subject to production test - verified by design/characterization.

⁴ Allowed number of short circuits: <1000; time between short circuits: >1s.